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**Remarks/Discussion of Issues**

This response is intended as a full and complete response to the non-final Office Action mailed May 13, 2003. The Office Action notes that claims 1-6 are pending in the application and rejects claims 1-6. As explained below, all of the pending claims are patentable.

**Objections**

The Office Action objected to the Abstract of the disclosure. The Abstract has been corrected by the deletions set forth above. Accordingly, withdrawal of the objection of the Abstract is respectfully requested.

The Office Action objects to the Specification and states that the formula for the intrinsically pigmented aluminate phosphor includes compositions where cobalt is not present ( $z = 0$ ). The Office Action states that where cobalt is the ion that makes the phosphor intrinsically pigmented, " $0 \leq z < 1$ " must be changed to " $0 < z < 1$ " so it is clear that cobalt must be present. Applicant respectfully traverses the objection as what is presented in the specification is a general formula for an intrinsically pigmented phosphor and doping with cobalt is one embodiment of the invention. Accordingly, withdrawal of the objection of the Specification is respectfully requested.

Claim 1 is objected to because the reference number (9) is recited. The reference number (9) has been deleted. Accordingly, withdrawal of the objection of Claim 1 is respectfully requested.

Claim 2 is objected to as being of improper dependent form. The Office Action suggests cancellation of the claim. Claim 2 is also objected to because the definition of "intrinsically pigmented" does not further limit Claim 1. The claim has been amended to recite "characterized in that the host lattice of the phosphor comprises an ion which has absorption bands within the host lattice in the wavelength range of the emission of the phosphor." Accordingly, withdrawal of the objection of Claim 2 is respectfully requested.

**35 U.S.C. §112, SECOND PARAGRAPH REJECTION OF CLAIM 3**

The Office Action rejects Claim 3 under 35 USC §112, second paragraph. The Office Action states that Claim 1 teaches the phosphor which is intrinsically pigmented, which means it contains an ion which has absorption bands within the wavelength range of the emission of the phosphor. The Office action objects to claim 3 as it

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includes compositions where cobalt is not present, when cobalt is the ion that makes the phosphor intrinsically pigmented. Claim 3 has been amended to provide that cobalt is present with  $0 < z < 1$ . Accordingly, withdrawal of the rejection of claim 3 is respectfully requested.

### 35 U.S.C. §102(b) REJECTION OF CLAIM 6

The Office Action rejects claim 6 under 35 U.S.C. §102(b) over Zachau et al (U.S. Patent No. 5,714,835). The Office Action asserts that Zachau teaches a phosphor having the formula  $\text{BaMgAl}_{10}\text{O}_{17}\text{Eu}_y$ , where  $y$  is 0.03-0.4 (col. 4, lines 15-18) and that Example 6 teaches a phosphor having the formula  $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}_{0.36}$ . The Office action states that these formulas fall within the claimed formula and Zachau teaches the claimed phosphor. Applicant respectfully traverses this rejection.

Claim 6 has been amended to recite a phosphor with the composition  $(\text{Ba}_{1-x-y}\text{Sr}_x)(\text{Mg}_{1-z}\text{Co}_z)_o\text{Al}_p)_q:\text{Eu}_y$  with  $0 \leq x < 1$ ,  $0.01 \leq y \leq 0.40$ ,  $0 < z < 1$ , and with  $o =$  chosen from the groups 1 and 3,  $p =$  chosen from the groups 10 and 14, and  $q =$  chosen from the groups 17 and 23.

Zachau teaches a phosphor having the formula  $\text{BaMgAl}_{10}\text{O}_{17}$  wherein cobalt ion is not present. Hence Zachau does not teach or suggest the features of claim 6. Therefore, claim 6 is allowable.

Accordingly, withdrawal of the 35 U.S.C. §102(b) rejections of claim 6 is respectfully requested.

### 35 U.S.C. §102(e) REJECTION OF CLAIMS 4 and 5

The Office Action rejects claims 4 and 5 under 35 U.S.C. §102(e) over Ellens et al (U.S. Patent No. 6,552,487). The Office Action asserts that Ellens teaches a phosphor co-doped with praseodymium, where the praseodymium absorbs part of the light emitted by the phosphor (col. 4, lines 10-13). The Office Action states that Ellens teaches the claimed screen and phosphor. Applicant respectfully traverses this rejection.

Claims 4 recites a luminous screen provided with a phosphor layer which comprises a phosphor which is intrinsically pigmented. Claim 5 recites a phosphor preparation comprising a phosphor which is intrinsically pigmented. An intrinsically pigmented phosphor is defined as a phosphor whose host lattice comprises an ion which has absorption bands with the host lattice in the wavelength range of the emission of the phosphor. The phosphor is thus given an intrinsic color which

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corresponds to its emission color hence the phosphor shows a high reflection at its emission color, whereas the remaining spectral components are less strongly reflected. The intrinsically pigmented phosphors efficiently convert VUV radiation into colored light (specification, page 2).

Ellens teaches a phosphor which is suitable for excitation in the short-wave visible spectral region. The phosphor has a garnet structure and is doped and activated with cerium and also contains praseodymium as a second activator (col. 1, lines 44-65). Due to the presence of trivalent praseodymium in the material, additional red light is emitted with the result that the color locus can be controlled within a wider range and the color reproduction is improved. The direct transfer of energy from the cerium ion to the praseodymium ion is also present and the cerium ion acts as a sensitizer for the second activator praseodymium (col. 3, line 66 to col. 4, line 16). Therefore, Ellens does not teach nor suggest the intrinsically pigmented phosphor of the invention, and does not teach nor suggest the unique combinations of features of claims 4 and 5. Therefore, claims 4 and 5 are allowable.

Accordingly, withdrawal of the 35 U.S.C. §102(e) rejection of claims 4 and 5 is respectfully requested.

#### 35 U.S.C. §102(b) and §102(e) REJECTION OF CLAIM 5

The Office Action rejects claim 5 under 35 U.S.C. §102(b) over Kaule et al (U.S. Patent 4,454,843) (the '843 patent) or Kaule et al (WO 99/38701, equivalent to U.S. Patent No. 6,344,261) (the '261 patent). The Office Action also rejects claim 5 under 35 U.S.C. §102(e) over the '261 patent.

The Office Action asserts that the references teach a phosphor co-doped with a transition metal ion which absorbs part of the light emitted by the phosphor, such as cobalt, iron or chromium. The Office Action states that the reference teaches an intrinsically pigmented phosphor and the references teach the claimed phosphor. Applicant respectfully traverses this rejection.

Claim 5 recites a phosphor preparation comprising a phosphor which is intrinsically pigmented. An intrinsically pigmented phosphor is defined as a phosphor whose host lattice comprises an ion which has absorption bands within the host lattice in the wavelength range of the emission of the phosphor. The phosphor is thus given an intrinsic color which corresponds to its emission color hence the phosphor shows a high reflection at its emission color, whereas the remaining spectral components are less

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strongly reflected. The intrinsically pigmented phosphors efficiently convert VUV radiation into colored light (specification, page 2).

The '843 patent teaches host lattices doped with rare earth metals. The host lattice absorbs essentially in the whole visible region and if appropriate in the near IR and can be excited in substantial portions of the visible or of the near IR-region and in the IR has an optically transparent region in which the substance exclusively emits. The host lattices find applicability in security paper with luminescent authenticity characteristics provided by the host lattice (col. 2, line 61 to col. 3, line 2). Therefore, the '843 patent does not teach nor suggest the intrinsically pigmented phosphor of the invention, and therefore does not teach nor suggest the unique features of claim 5. Therefore, claim 5 is allowable.

The '261 patent teaches a host lattice which is doped with at least one rare earth metal which largely absorbs in the entire visible region of the spectrum and are largely transparent in the near IR region. The host lattices find applicability in the protection of printed valuable document with at least one authentication feature in the form of a luminescent substance based on the host lattice (col. 1, lines 6-36). Therefore, the '261 patent does not teach nor suggest the intrinsically pigmented phosphor of the invention, and hence does not teach nor suggest the unique features of claim 5. Therefore, claim 5 is allowable.

Accordingly, withdrawal of the 35 U.S.C §102(b) and §102(e) rejection of claim 5 is respectfully requested.

#### 35 U.S.C. §103(a) REJECTION OF CLAIMS 1, 2, 4 AND 5

The Office Action rejects claims 1, 2, 4 and 5 under 35 U.S.C. §103(a) in view of Juestel et al (U.S. Patent No. 6,462,473). Applicant respectfully traverses this rejection.

The application and reference were at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Accordingly, withdrawal of the 35 U.S.C. §103 rejection of claims 1, 2, 4 and is respectfully requested.

#### CONCLUSION

In view of the foregoing, the Applicant believes that the subject application is in condition for allowance. Applicant requests the Examiner to reconsider and reexamine the subject application. An early, favorable action is respectfully solicited.

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**OFFICIAL**

If the Examiner deems that a telephone call would further the prosecution of this application, the Examiner is invited to call Mr. Eric Bram at (914) 333-9635. All correspondence should continue to be sent to the address of record (not to the signing attorney).

If these papers are not considered timely filed by the United States Patent and Trademark Office, or if any additional fees are required, kindly charge that fee to deposit account number 20-0782.

Respectfully submitted,

Dated: 8/11/03  
Lina Benovesi  
Reg. No. 35,154  
(732) 530-9404**FAX RECEIVED**  
AUG 12 2003  
GROUP 1700

Moser, Patterson & Sheridan, LLP  
Attorneys at Law  
595 Shrewsbury Avenue  
Suite 100  
Shrewsbury, NJ 07702